purpose of calculating the Vertical Liquid Flux, it is preferred to use more than two weight and time values near the desired height. Various graphical and statistical techniques confirm accuracy of the estimate of Vertical Liquid Flux at either 5 or 15 centimeters.

While the invention has been described in detail with respect to specific embodiments thereof, it will be appreciated that those skilled in the art, upon attaining an understanding of the foregoing, may readily conceive of alterations to, variations of, and equivalents to these embodiments. Accordingly, the scope of the present invention should be assessed as that of the appended claims and any equivalents thereto.

WHAT IS CLAIMED IS:

1. A composite absorbent structure, comprising:

a. a first wicking layer comprising wettable lamellae wherein the first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.08 grams of liquid per minute per gram of absorbent structure per meter length of the first wicking layer;

b. a second retention layer comprising a hydrogel-forming polymeric material; and/or

c. a bonding agent for bonding said first wicking layer and said second retention layer to form a composite absorbent structure capable of liquid transport and liquid retention functions at a length of at least about 15 centimeters, a saturated capacity of at least about 5 grams of liquid per gram of composite absorbent structure, and an Absorbent Capacity at 15 cm of at least about 5 grams of liquid per gram of second retention layer.

2. The composite absorbent structure of Claim 1, wherein said absorbent structure has a wet geometric mean breaking length of at least 5 meters and a dry geometric mean breaking length of at least 50 meters, and wherein said first wicking layer exhibits a vertical liquid flux rate at a height of about 5 centimeters of at least about 0.4 grams of liquid per minute, said first wicking layer exhibits a wicking time of less than about 3.5 minutes, and said first wicking layer, has a basis weight greater than 100 grams per square meter and less than 300 grams per square meter.

3. The absorbent structure of Claim 1, wherein said bonding agent comprises polyhydroxyalkanoate.

4. The absorbent structure of Claim 1, wherein said bonding agent comprises poly(lactic)acid.

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5.   The absorbent structure of Claim 1, wherein said hydrogel-forming polymeric material comprises a superabsorbent.

6.   The absorbent structure of Claim 1, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.1 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

7.   The absorbent structure of Claim 1, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.2 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

8.   The absorbent structure of Claim 1, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 5 centimeters of at least about 0.4 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

9.   The absorbent structure of Claim 1, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 5 centimeters of at least about 0.6 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

10.   A composite absorbent structure, comprising:
a.   a first wicking layer comprising wettable foams wherein the first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.08 grams

of liquid per minute per gram of absorbent structure per meter length of the first wicking layer;

    b.   a second retention layer comprising a hydrogel-forming polymeric material; and/or

    c.   a bonding agent for bonding said first wicking layer and said second retention layer to form a composite absorbent structure capable of liquid transport and liquid retention functions at a length of at least about 15 centimeters, a saturated capacity of at least about 5 grams of liquid per gram of composite absorbent structure, and an Absorbent Capacity at 15 cm of at least about 5 grams of liquid per gram of second retention layer.

11.   The composite absorbent structure of Claim 10, wherein said wherein said absorbent structure has a wet geometric mean breaking length of at least 5 meters and a dry geometric mean breaking length of at least 50 meters, and wherein said first wicking layer exhibits a vertical liquid flux rate at a height of about 5 centimeters of at least about 0.4 grams of liquid per minute, said first wicking layer exhibits a wicking time of less than about 3.5 minutes, and said first wicking layer, has a basis weight greater than 100 grams per square meter and less than 300 grams per square meter.

12.   The absorbent structure of Claim 10, wherein said bonding agent comprises polyhydroxyalkanoate.

13.   The absorbent structure of Claim 10, wherein said bonding agent comprises poly(lactic)acid.

14.   The absorbent structure of Claim 10, wherein said hydrogel-forming polymeric material comprises a superabsorbent.

15.   The absorbent structure of Claim 10, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.1 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

16.   The absorbent structure of Claim 10, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.2 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

17.   The absorbent structure of Claim 10, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 5 centimeters of at least about 0.4 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

18.   The absorbent structure of Claim 10, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 5 centimeters of at least about 0.6 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer

19.   A method of forming a composite absorbent structure, comprising:
       a.   providing a first wicking layer of wettable cellulosic lamellae or foams wherein the first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.08 grams of liquid per minute per gram of absorbent structure per meter length of the first wicking layer;

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b.   providing a second retention layer of a hydrogel-forming
polymeric superabsorbent material;

c.   providing a bonding agent for bonding said first wicking
layer and said second retention layer; and

5   d.   combining said first wicking layer, said second retention
layer, and said bonding agent to form a composite absorbent struc-
ture having a minimum contact intimacy ratio for providing a
liquid transport function and a liquid retention function such
that the first wicking layer and the second retention layer are
10   combined together in a manner to obtain a contact to achieve
liquid transport and liquid retention functions at a length of at
least about 15 centimeters, a saturated capacity of at least about
5 grams of liquid per gram of composite absorbent structure, and
an Absorbent Capacity at 15 cm of at least about 5 grams of liquid
15   per gram of second retention layer.

20.   The method of forming a composite absorbent structure
absorbent structure as set forth in Claim 19, wherein said absor-
bent structure has a wet geometric mean breaking length of at
least 5 meters and a dry geometric mean breaking length of at
20   least 50 meters, and wherein said first wicking layer exhibits a
vertical liquid flux rate at a height of about 5 centimeters of at
least about 0.4 grams of liquid per minute, said first wicking
layer exhibits a wicking time of less than about 3.5 minutes, and
said first wicking layer, has a basis weight greater than 100
25   grams per square meter and less than 300 grams per square meter.

21.   The method of forming a composite absorbent structure
absorbent structure as set forth in Claim 19, wherein said bonding
agent comprises polyhydroxyalkanoate.

22. The method of forming a composite absorbent structure absorbent structure as set forth in Claim 19, wherein said bonding agent comprises poly(lactic)acid.

5   23. A disposable absorbent product comprising a liquid-permeable top sheet, a back sheet attached to said top sheet, and an absorbent structure positioned between said top sheet and said back sheet, said absorbent structure having a first wicking layer of wettable lamellae or foams exhibiting a vertical liquid flux
10   rate value at a height of about 15 centimeters of at least about 0.08 grams of liquid per minute per gram of absorbent structure per meter length of said first wicking layer, a second retention layer of a hydrogel-forming polymeric superabsorbent material, and a bonding agent for bonding said first wicking layer and
15   said second retention layer to form a composite absorbent structure having a minimum contact intimacy ratio for providing a liquid transport function and a liquid retention function such that said first wicking layer and said second retention layer are combined together in a manner to obtain a contact to achieve liquid trans-
20   port and liquid retention functions at a length of at least about 15 centimeters, a saturated capacity of at least about 5 grams of liquid per gram of composite absorbent structure, and an Absorbent Capacity at 15 cm of at least about 5 grams of liquid per gram of second retention layer.

25   24. The composite absorbent structure of Claim 23, wherein said absorbent structure has a wet geometric mean breaking length of at least 5 meters and a dry geometric mean breaking length of at least 50 meters, and wherein said first wicking layer exhibits a vertical liquid flux rate at a height of about 5 centimeters of
30   at least about 0.4 grams of liquid per minute, said first wicking layer exhibits a wicking time of less than about 3.5 minutes, and

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said first wicking layer, has a basis weight greater than 100 grams per square meter and less than 300 grams per square meter.

25. The absorbent structure of Claim 24, wherein said bonding agent comprises polyhydroxyalkanoate.

5   26. The absorbent structure of Claim 24, wherein said bonding agent comprises poly(lactic)acid.